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(54) Title: METHOD FOR THE ELECTROCHEMICAL SYNTHESIS OF AMMONIA AND APPARATUS FOR CARRYING OUT THE METHOD

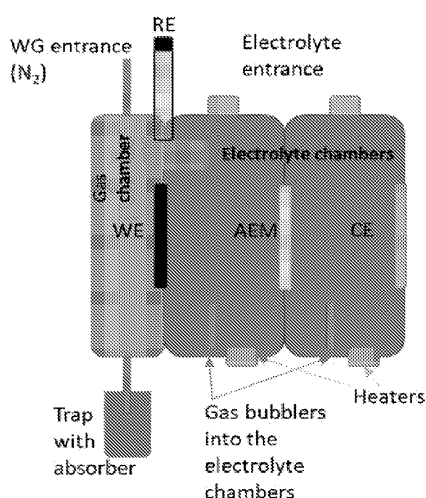


FIG. 1

(57) Abstract: A method for the electrochemical synthesis of ammonia (NH_3) comprises contacting a nitrogen-containing gas with the cathode of an electrochemical cell comprising a cathode, an anode, an alkaline aqueous electrolyte, and preferably an anion exchange membrane. The cathode is a porous gas diffusion electrode which comprises an active layer comprising a material which is capable of catalyzing the electrochemical reduction of nitrogen and is in contact with the electrolyte, a layer of electroconductive material supporting the active layer, and a porous polymer film on the side of the active layer which does not come into contact with the electrolyte and comes into direct contact with the nitrogen-containing gas. A potential over the electrochemical cell is applied to effect the electrochemical synthesis of ammonia from nitrogen and water. The method can be used to synthesize ammonia without using molecular hydrogen.

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